

# Perceived effectiveness of diagnostic and therapeutic guidelines in primary care quality circles

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## Abstract

**Objective.** The main objectives of this study were to implement quality circle programs among general practitioners and to evaluate this quality management tool as a way to develop clinical guidelines in general practice.

**Design.** The quality circle program was evaluated within a formative and summative evaluation design by both participants and moderators for a period of 18 months using structured questionnaires. At time one, participants were asked about their goals and current job satisfaction, and rated the perceived effectiveness and the usefulness of predefined guidelines of each quality circle meeting. At time two, participants and moderators reported again about their achieved goals and job satisfaction.

**Setting and study participants.** Two hundred and forty-three general practitioners in a district of South Germany (Südbaden), in 25 quality circle groups participated.

**Main measures.** Demographic variables of the participating physicians, quality circle goals, job satisfaction, usefulness of guidelines and perceived effectiveness of the quality circle process were collected.

**Results.** One hundred and six quality circle meetings were evaluated. When asked to rank the goals of quality circle work, participants provided the highest rankings for improvement of the doctor–doctor relationship, agreeing on consensus for diagnostic procedures and therapy management, and developing local guidelines. The comparison between time one and time two ratings provided evidence for an increase in overall job satisfaction. Higher benefit is correlated with more regular participation in quality circle meetings.

**Conclusion.** Working with predefined guidelines is both feasible and effective in quality circles and may provide a starting point for developing guidelines in primary care. There is some empirical evidence that participating in quality circles may increase general practitioners' job satisfaction. Further studies using intervention and control group designs should investigate whether quality circles really improve daily practice through clinical audit and benchmarking techniques.

**Keywords:** evaluation, guidelines, quality circle, primary health care

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Studies in Europe have shown that quality circles of care providers are one of the preferred methods for quality improvement and change in health care [1–3]. Specific models and methods for quality circle programs in general practice have been developed recently in Germany [4,5]. Despite this, little is known about structures, conditions, methodology and effects of quality circles on physicians' performance and behaviour [6–8]. In 1989, the health law reform ('Gesundheitsreformgesetz') established rules for quality assurance in the German health care system [9]. In 1993, the health structure law ('Gesundheitsstrukturgesetz') added more specific recommendations to the existing body of rules about

quality assurance with the explicit aim to stimulate quality assurance programs in primary and hospital care. In the same year, the Professional Board of Ambulatory Care Doctors (PBACD) also passed guidelines for the establishment of quality assurance programs. These guidelines emphasized promotion of quality circles in primary care and defined quality circle work as:

'a process for planned activities based on performance review with the aim of continually improving quality of patient care. Voluntary participation and regular meetings (every 4–6 weeks) of a team of doctors, specialists or other

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**Table 1** Approaches to the development of guidelines

	Advantages	Disadvantages
Decentralized approach Fardy & Jeffs, 1994 [1]	Acceptance through ownership	Time consuming and difficult task
North of England Study, 1990 [3]	Guidelines are adaptable to local conditions	Specific skills required No sound scientific basis
Centralized approach Dutch College of GPs [15]	Sound scientific basis (evidence based) Structured and professional	No 'ownership' by GPs Target group not involved Not adapted to local conditions

professions in health care under the guidance of a trained moderator are the key elements of quality circle work. The main objective is the formulation of guidelines for good care.' [5]

Although quality circles are a very popular tool of quality management in Germany, no studies have up to now evaluated their efficacy and effectiveness [10]. The main objectives of this study were to implement quality circles among general practitioners (GPs) in Südbaden and to test this quality management tool as a way to develop guidelines for diagnosis and treatment. In addition, the specific goals of the participating doctors, the learning process within the quality circle groups, and the usefulness of predefined guidelines (recommendations for diagnosis and therapy) were evaluated.

## Methods

### The Südbaden quality circle programme

In early 1993, the PBACD in Südbaden brought together a group of GPs and experts from the Departments of General Practice and Psychiatry and Psychotherapy at the University Clinic of Freiburg. This steering committee developed the conceptual framework for quality circles in Südbaden [11].

In general, the key elements of the Südbaden quality circle program are similar to other quality circle concepts in primary health care [6,12]. Most authors agree that the formulation of clinical guidelines is essential in quality circle work [13, 14]. There is disagreement, however, as to the origin of these guidelines and about who should formulate them. There appear to be two main approaches to the development of guidelines in general practice [15]. In the 'decentralized approach', a local group formulates guidelines on the basis of available expertise and experiences and attempts to reach consensus through peer review discussions. In the 'centralized approach', however, a group of expert GPs develops guidelines with a broad, preferably national legitimacy on the basis of an analysis of the scientific literature and clinical experience (Table 1).

Our concept differs from others, however, in that we use moderator-manuals as a combination of the two approaches. Moderator-manuals provide information about appropriate diagnostic and therapeutic recommendations to the GPs for

common diseases such as hypertension, sleeping disorders, diabetes mellitus, chronic obstructive pulmonary disease, back pain etc [5]. The main goal of the topic-oriented approach was to increase the physicians' ability to evaluate their own performance. The main purpose of moderator-manuals is (i) to provide epidemiological information about various diseases and their financial burden, (ii) to provide recommended procedures for diagnosis and therapy, and (iii) to convey non-pharmacological treatment strategies for patients and GPs to manage the various disease conditions without medication.

Presentation of these predefined guidelines was meant to encourage the participating doctors to assess their own performance and to foster discussion and refinement of the moderator-manuals. It was seen as important that the guidelines were presented in a way that the participants were able to make modifications [16]. They served as a starting point to discuss diagnostic and therapeutic problems, supporting moderators in their preparation and stimulating the group members in supplementing and refining the introduced guidelines. The main goal of this topic-oriented approach was the development of local guidelines by each quality circle group (Table 2).

However, these predefined guidelines do not yet meet the international standards for 'guidelines for guidelines' [17]. The recommendations serve as a measure to compare the daily practice care of the quality circle participants.

Quality circle leaders were trained on how to use moderator-manuals for their quality circle work and how to teach quality improvement techniques together with their circle participants. These courses consisted of lectures and workshops that emphasized video and problem-based learning [18].

### Evaluation design

The evaluation program focused on three different dimensions of quality (i.e. structure, process and outcome) [19]. For each of these dimensions, specific questionnaires had been developed (Table 3). Before starting quality circle work (time one), participants were given a questionnaire asking about their goals and their present job satisfaction (questionnaire one). At the end of each meeting, participants and moderators rated individually the perceived effectiveness of that quality circle meeting and the usefulness of the

**Table 2** Quality circle principles in Südbaden

Key elements and aims	
Key elements	
Voluntary participation	
Regular meetings (preferably once a month)	
6–12 GPs and specialists in each group	
Trained moderator to facilitate discussions	
Topic-oriented programme with moderator-manuals (predefined guidelines)	
Use of quality management techniques (e.g. PDCA-Cycle) in order to bring about change	
Provide training courses and supervision for quality circle moderators	
Documentation and evaluation of the quality circles	
Aims	
To increase physicians' ability to evaluate their own performance and behaviour	
To agree upon and formulate guidelines	
To assess the effects of the guidelines	

**Table 3** Evaluation design

Dimensions	Target group	Measures	Time
Structure (Questionnaire one)	Moderators ( $n=40$ ) Participants ( $n=203$ )	Demographic variables Information about physicians' practices Goals of quality circles Job satisfaction	Before starting the quality circle work (Time one)
Process (Questionnaire two)	Moderators ( $n=97$ ) Participants ( $n=627$ )	Number of meetings Group sizes Usefulness of the moderator-manuals	Every quality circle meeting ( $t_1, t_2, t_3 \dots t_n$ )
Outcome (Questionnaire three)	Moderators ( $n=18$ ) Participants ( $n=101$ )	Job satisfaction Goal achievement through quality circle work Overall perceived effectiveness	At the end of the evaluation study (Time two)

moderator-manuals (questionnaire two). At the end of the evaluation (time two), participants and moderators were asked about their goal achievement and present job satisfaction (questionnaire three).

## Measures

### Questionnaire one

Before working in the quality circle, participants and moderators provided details relating to demographic variables (age, gender) and information about physicians' practices (type of practice etc.). They also ranked their specific goals for quality circle work from a list of 31 goals (where one is 'not important at all' and 5 is 'most important').

### Questionnaire two

In order to assess the group's proceedings, participants and moderators rated the learning process in each meeting on a five-point Likert scale (where one is 'completely disagree' and five is 'completely agree'). They also rated the supervisory role of their group leaders (e.g. 'The moderator ensured that the group tasks were achieved', 'The moderator ensured that all participants understood the identified problem area'). Participants also rated three statements about the feasibility and usefulness of the moderator-manuals on a five-point Likert scale (where one is 'completely disagree', and five is 'completely agree'): (i) 'The recommended procedures for diagnosis and therapy are helpful', (ii) 'The non-pharmacological treatment strategies for patients and doctors to

manage the disease without medication are useful' and (iii) 'The proposed guidelines are applicable in daily practice'.

### Questionnaire three

At the end of the evaluation program, the GPs reported their satisfaction with 10 specific aspects of their work on a five-point Likert scale (where one is 'not satisfied at all' and five is 'completely satisfied'). These aspects included staff motivation, staff performance, overall job satisfaction, practice routines and own performance, practice organization, working conditions, relations with other colleagues, income, financial and occupational security in the future and professional policy. Respondents indicated on a five-point Likert scale their agreement with each of 9 items regarding the overall effectiveness of quality circle work in where one is 'strongly disagree' and 5 is 'strongly agree'.

### Statistical analysis

Data were entered on a computerized database (Dbase IV) and statistical analyses were performed using SPSS statistical software. Descriptive analysis established percentage or mean (SD) ratings whereas bivariate chi-squared analysis identified significant cross tabulations. Subgroup analyses were undertaken between moderators and participants. For the comparison (differences in responses between time one and time two) two-tailed t-tests were performed.

## Results

### Sample

Two hundred and forty-three physicians from 25 quality circles completed the first evaluation questionnaire. This represents 14% of all the GPs in the area of Südbaden ( $n=1779$ ). Physicians from 18 quality circles completed the third questionnaire. Complete evaluation data (questionnaire one and three) were available for 119 participants ( $n=101$ ) and moderators ( $n=18$ ). From a total of 144 meetings, over a period of 18 months, 106 quality circles were evaluated with questionnaire two ( $n=724$ ).

### Demographics and goal analysis

Out of the 243 physicians who participated in the quality circles, 75% were GPs, 20% were internists working in primary care and 5% were other specialists. On average, the participants were 47 years old (range 31–73 years,  $SD=7.0$ ) and the average number of years in practice was 11 (range 1–426 months,  $SD=6.4$ ). In comparison to 33% of all German doctors, approximately 50% of the moderators and 29% of participants were physicians practicing in a group setting (Table 4).

When asked about their most important goals, participants and moderators provided the highest rankings for (i) improvement of the doctor–doctor relationship, (ii) agreeing on consensus for diagnostic procedures and therapy management on group basis, (iii) exchanging practice experiences

with colleagues and (iv) developing local guidelines in general practice (Table 5). The analyses between moderators and participants showed no differences.

### Structure and process quality

On average, meetings were held every 9 weeks (range: 4–17 weeks). Twenty-five percent of the groups met every 4–6 weeks and 38% every 7–9 weeks. A quarter of the groups met every 10–12 weeks and 12% had a time interval of 13–18 weeks. On average, the quality circles consisted of 8 participants (range 3–19). This group size was recommended within the conceptual framework for the quality circles (Table 1), whereas the frequency of the group meetings was less than proposed. In approximately half of the meetings (53%), moderator-manuals were used. Participants generally rated the usefulness of the moderator-manuals very positively. With regard to the learning process of each meeting, participants judged the group discussions about the topics as 'interesting' (mean = 4.4;  $SD=0.7$ ), generally considered the engagement as 'valuable' and 'pleasurable' (mean = 4.2;  $SD=0.8$ ), and thought that it corresponded well with their daily practice (mean = 3.5;  $SD=1.0$ ). Also, they felt that it had improved their competence (mean = 3.4;  $SD=1.1$ ) and that the new information about diagnosis and therapy was applicable in practice (mean = 3.3;  $SD=1.1$ ).

### Overall effectiveness of quality circle work

The doctors rated the effectiveness of the quality circles very highly. Specifically, the mean of 'exchanging practice experiences with other colleagues' was 4.5 ( $SD=0.6$ ), 'has met expectations' was 4.0 ( $SD=1.0$ ), and 'benefited from the participation' was 4.1 ( $SD=0.9$ ). Also, the mean for 'learning new medical knowledge' was 3.8 ( $SD=0.9$ ), the 'relevance for my own practice' was 3.7 ( $SD=0.9$ ), and 'stimulating and promoting self study' was 3.5 ( $SD=1.1$ ). In contrast 'similar benefit achievable from practice work' was rated low with a mean of 2.3 ( $SD=0.8$ ). As shown in Table 6, the doctors benefited a great deal from their participation. Furthermore, doctors who participated in quality circle work more frequently were more likely to agree that it increased their medical knowledge and their benefit from participation.

The comparison between time one and time two showed an increase in the ratings of the following work satisfaction items: staff motivation, practice routines, relations with other colleagues and overall job satisfaction (Table 7).

## Discussion

14% of all GPs in the district of Südbaden participated in quality circles on a voluntary basis. Considering the difficulties of establishing quality circles in Germany, the recruitment of doctors from ambulatory care for this study was successful. The demographic background of the participating physicians did not differ from other German GPs except for their practice setting (individual versus group practice) and number of years in practice. On average, groups consisted of eight

**Table 4** Demographic background of moderators and participants

	Moderators ( <i>n</i> = 40)	Participants ( <i>n</i> = 203)	Total ( <i>n</i> = 243)
Age (in years)	46.8	47.2	47.1
Gender (% male: female)	88:12	73:27	75:25
Medical education (%)			
General practitioner	65	75	74
Internist	35	20	22
Other specialties	0	5	4
Type of practice (%)			
Individual practice	50	66	63
Group practice (group billing)	45	29	32
Practice group (individual billing)	5	5	5

**Table 5** Highest ranked goals of quality circle work<sup>1</sup>

	Mean	SD
1. Improvement of the doctor–doctor relationship	4.2	0.8
2. Agreeing on consensus for diagnostic procedures and therapy management on group basis	4.1	0.7
3. Exchanging practice experiences with colleagues	4.0	0.9
4. Developing local guidelines in general practice	3.9	0.9
5. More self-confidence and certainty in daily practice	3.9	0.9
6. Quality assurance from bottom-up	3.9	0.9
7. Improvement of diagnosis and therapy	3.8	0.9
8. Improvement of pharmacotherapy	3.7	1.1
9. Overcoming the isolation of an individual practice	3.6	1.1
10. Quality of care of the chronically ill	3.5	1.0

<sup>1</sup>Top 10 ranks out of list of 31 items (*n* = 243) with items rated on a 5-point Likert scale where one is 'not important at all' and five is 'very important'.

**Table 6** Correlations between the effectiveness of the overall quality circle work and the frequency of meetings (*n* = 119)

	Frequency of meetings
Has met expectations	0.37 <sup>1</sup>
Benefit from the participation	0.35 <sup>1</sup>
Relevance for my own practice	0.27 <sup>1</sup>
Stimulating and promoting self study	0.25 <sup>2</sup>
Satisfaction with quality circle work	0.21 <sup>2</sup>
Learning new medical knowledge	0.21 <sup>2</sup>
Exchanging practice experiences with other colleagues	0.18 <sup>2</sup>

<sup>1</sup>  $P \leq 0.001$ . <sup>2</sup>  $P \leq 0.05$ .

participants and six meetings were held per year. According to the participants, the main three goals of quality circles were improvement of the doctor-doctor relationships, agreement on diagnostic and therapeutic procedures and the exchange of practice experiences with colleagues. We found

that working with predefined guidelines was feasible in local quality circle groups of GPs and may provide a starting point for the development and adherence to guidelines in primary care. This approach of quality circle work is also used in other parts of South Germany (Bavaria) and was successfully

Table 7 Job satisfaction

	Mean	Mean	Paired t-test
	T 1	T 2	<i>P</i>
Relations with colleagues	3.3	3.6	<sup>1</sup>
Practice routines	3.5	3.8	<sup>1</sup>
Overall job satisfaction	3.7	4.0	<sup>2</sup>
Staff motivation	3.7	4.0	<sup>3</sup>
Professional policies	1.9	2.1	<sup>3</sup>
Staff performance	3.9	4.0	NS <sup>4</sup>
Practice organization	3.5	3.7	NS
Working conditions	3.5	3.6	NS
Occupational security	2.6	2.8	NS

<sup>1</sup>  $P \leq 0.001$ . <sup>2</sup>  $P \leq 0.01$ . <sup>3</sup>  $P \leq 0.05$ . Items rated on a 5-point Likert scale where one is 'not important at all' and five is 'very important'. <sup>4</sup> Not significant.

adapted to the quality circle work of psychiatrists and psychotherapists [20].

It should be noted, however, that the introduction of and the adherence to guidelines is a very complex process with different steps including creating guidelines (development), assimilation of the guidelines through quality circle work (dissemination) and ensuring the adherence to the guidelines (implementation and evaluation). At this stage we need to evaluate the dissemination and impact of guidelines through quality circle work [14,15].

During the pilot study it was not possible to convince the participants to follow the Plan-Do-Check-Act (PDCA)-Cycle in order to evaluate the impact of guidelines. In Germany there is still a lack of acceptance for using quality management techniques for the benchmarking of practice work. Although the majority of quality circles used the guidelines for discussions in their group work they did not follow the PDCA-Cycle in order to bring about changes in their daily practice care. In fact hard figures about performance in daily practice are lacking because no audit on clinical performance was done. This is in line with other quality circle studies, which reported similar findings regarding the reluctance of quality circle participants in Germany to implement quality management techniques in their general practice [21–23]. Participating in quality circles is still voluntary and there are no incentives for quality circle work. We consider this a major barrier to performing a real practice audit within the quality circles.

On the other hand, this study provided empirical hints that engaging in quality circles may increase GPs' job satisfaction. These findings are in line with studies that reported an association between engaging in peer review and physician satisfaction [24,25].

An impression of the learning process of the participants can be derived from their self reported improvements. However, the benefit from participation depended significantly on the frequency of meetings. Real improvements to performance in daily care can only occur if there is an ongoing and regular quality circle process.

Although the findings reported here suggest that GPs benefit from quality circles, several limitations of the design should be addressed. In general the interpretation of self reports are crucial. We could not include a control group of physicians not participating in quality circle work. The inclusion of an appropriate comparison group would have allowed us to examine and clarify the association between physicians' participation in quality circles and job satisfaction. Furthermore, the reported data about effectiveness of quality circle work may be biased because opinions of participants depend on people within the same group (same moderator). The main objective of our study was to implement successful quality circles among GPs on a broad basis and within a short period of time. At this stage it was not possible to validate the self reported results by data from other sources, because the reluctance of the participating doctors to have their work evaluated did not allow us to collect data about performance in daily practice.

Further research is needed to clarify the relationship between quality circle work, overall job satisfaction and quality of patient care. It is also recommended that a procedure for longitudinal evaluation of quality circles be implemented to obtain valid information about the life-span process and long-term effects of quality circle groups. Finally, new studies should investigate the effects of specialized guideline-oriented approaches on changes in daily routine and improvement of care.

Since the year 2000 the German Ministry of Research and Education has sponsored within the research grants 'Competence Networks in Medicine' a comprehensive quality management project in depression ([www.kompetenznetz-depression.de](http://www.kompetenznetz-depression.de)) [26]. Based upon quality circles on the general practitioner, psychiatric and psychotherapeutic level, guidelines for depressive disorders (detection – diagnosis – therapy-maintenance – relapse prevention) will be adapted [27,28] or newly developed. The program will be evaluated from summer 2001 regarding the acceptance and adherence of the attending doctors, therapists and patients themselves, and the efficacy by means of a control group design. A fundamental project

goal is to investigate to what extent an incentive oriented wage system leads to quality improvement in diagnostic and therapy of depressive disorders, i.e. to realize that participants who adhere to clinical guidelines for depression will get a financial bonus. The planned study represents a novelty in development and establishment of internal quality-management in out-patient care because in Germany no study investigating the implementation of guidelines had been completed up to now.

## Acknowledgements

This study was carried out in collaboration with the Association of Statutory Health Insurance Physicians of Südbaden. Funding for this study was provided by Novartis and a sponsoring pool of nine other companies (Lilly, Boehringer Mannheim, Glaxo Wellcome, Knoll, Merck KGaA, Pharmacia, Upjohn, Boehringer Ingelheim, Thomae). This work was also supported in part by a grant (HA 2864/1-1) of the German Research Group (Deutsche Forschungsgemeinschaft, Bonn) to Martin Härter. Particular thanks are due to Felipe Hernandez for help in translating the paper. We gratefully acknowledge the participation of all moderators of quality circles, who made it possible to accomplish this project.

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**Accepted for publication 1 February 2001**